

SEQUENCE LISTING

<110> Steinman, Ralph
Nussenzweig, Michel
Hawiger, Daniel
Bonifaz, Laura

<120> Enhanced Antigen Delivery and Modulation
of the Immune Response Therefrom

<130> 600-1-081CONCIP1

<150> 09/925,284

<151> 2001-08-09

<150> 09/586,704

<151> 2000-06-05

<150> PCT/US96/01383

<151> 1996-01-31

<150> 08/381,528

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<170> FastSEQ for Windows Version 4.0

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<210> 21

<211> 497

<212> PRT

<213> human immunodeficiency virus gag protein

<400> 21

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Pro Gly Gln Val Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr

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Gln

<210> 22
 <211> 1001
 <212> PRT
 <213> human immunodeficiency virus pol protein

<400> 22

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 <211> 101
 <212> PRT
 <213> human immunodeficiency virus tat protein

<400> 23
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 Arg Lys Lys Arg Arg Gln Arg Ser Ala Pro Pro Gly Ser Lys Asn
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 His Gln Asp Leu Ile Pro Glu Gln Pro Leu Phe Gln Thr Gln Arg Lys
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<210> 24
 <211> 116
 <212> PRT
 <213> human immunodeficiency virus rev protein

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 Gly Ser Arg Gln Ala Arg Arg Asn Arg Arg Arg Trp Arg Ala Arg
 35 40 45
 Gln Asn Gln Ile Asp Ser Ile Ser Glu Arg Ile Leu Ser Ser Cys Leu
 50 55 60
 Gly Arg Pro Ala Glu Pro Val Pro Leu Gln Leu Pro Pro Ile Glu Arg
 65 70 75 80
 Leu Arg Leu Asp Cys Ser Glu Asp Cys Gly Asn Ser Gly Thr Gln Gly
 85 90 95
 Val Gly Asp Pro Gln Ile Ser Gly Glu Pro Cys Met Val Leu Gly Ala
 100 105 110
 Gly Thr Lys Glu
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<210> 25
 <211> 850
 <212> PRT
 <213> human immunodeficiency virus env protein

<220>
 <221> VARIANT
 <222> 554
 <223> Xaa = Any Amino Acid

<400> 25

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Ile	Phe	Gly	Met	Leu 20	Met	Ile	Cys	Ser	Ala	Arg	Glu	Asn	Leu 30	Trp	Val
Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Arg	Asp	Ala	Lys	Thr	Thr	Leu
Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Ser	Thr	Glu	Lys	His	Asn	Val
Trp 65	Ala	Thr	His	Ala 70	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro	Gln	Glu	Met
Ser	Leu	Pro	Asn	Val 85	Thr	Glu	Asn	Phe	Asn 90	Met	Trp	Lys	Asn	Asp	Met
Val	Asp	Gln	Met	Gln 100	Glu	Asp	Ile	Ile	Ser	Val	Trp	Asp	Glu	Ser	Leu
Lys	Pro	Cys	Val	Lys 115	Ile	Thr	Pro	Leu	Cys	Val	Thr	Leu	Asn	Cys	Ser
Asp	Val	Asn	Ser	Asn 130	Asn	Ser	Thr	Asp	Ser	Asn	Ser	Ser	Ala	Ser	Asn
Asn 145	Ser	Pro	Glu	Ile 150	Met	Lys	Asn	Cys	Ser	Phe	Asn	Val	Thr	Thr	Glu
Ile	Arg	Asn	Lys	Arg 165	Lys	Gln	Glu	Tyr	Ala	Leu	Phe	Tyr	Arg	Gln	Asp
Val	Val	Pro	Ile	Asn 180	Ser	Asp	Asn	Lys	Ser	Tyr	Ile	Leu	Ile	Asn	Cys
Asn	Thr	Ser	Val	Ile 195	Lys	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Gln	Pro
Ile	Pro	Ile	His	Tyr 210	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys
Asn 225	Asn	Lys	Thr	Phe 230	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr
Val	Gln	Cys	Thr	His 245	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu
Leu	Asn	Gly	Ser	Val 260	Ala	Glu	Gly	Asp	Ile	Ile	Ile	Arg	Ser	Glu	Asn
Ile	Ser	Asp	Asn	Ala 275	Lys	Asn	Ile	Ile	Val	Gln	Leu	Asn	Asp	Thr	Val
Glu	Ile	Val	Cys	Thr 290	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Gly	Ile	His
Met 305	Gly	Pro	Gly	Gln 310	Val	Leu	Tyr	Ala	Thr	Gly	Glu	Ile	Ile	Gly	Asp
Ile	Arg	Lys	Ala	Tyr 325	Cys	Asn	Ile	Ser	Arg	Lys	Asp	Trp	Asn	Asn	Thr
Leu	Arg	Arg	Val	Ala 340	Lys	Lys	Leu	Arg	Glu	His	Phe	Asn	Lys	Thr	Ile
Asp	Phe	Thr	Ser	Pro 355	Ser	Gly	Gly	Asp	Ile	Glu	Ile	Thr	Thr	His	Ser
Phe	Asn	Cys	Gly	Gly 370	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Thr	Leu	Phe
Asn 385	Ser	Ser	Trp	Asp 390	Glu	Asn	Asn	Ile	Lys	Asp	Thr	Asn	Ser	Thr	Asn
Asp	Asn	Thr	Thr	Ile 405	Thr	Ile	Pro	Cys	Lys	Ile	Lys	Gln	Ile	Val	Arg
Met	Trp	Gln	Arg	Thr 420	Gly	Gln	Ala	Ile	Tyr	Ala	Pro	Pro	Ile	Ala	Gly
Asn	Ile	Thr	Cys	Lys 435	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp
Gly	Gly	Asn	Arg	Asn 450	Gly	Ser	Glu	Asn	Gly	Thr	Glu	Thr	Phe	Arg	Pro

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Thr	Gly	Gly	Asn	Met	Lys	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	
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Lys	Val	Val	Glu	Leu	Glu	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	Lys	
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Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	
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Phe	Leu	Gly	Phe	Leu	Gly	Thr	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	
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Ile	Thr	Leu	Thr	Val	Gln	Val	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	
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Gln	Gln	Ser	Asn	Leu	Leu	Lys	Ala	Ile	Xaa	Ala	Gln	Gln	His	Leu	Leu	
545				550					555					560		
Lys	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	
			565					570					575			
Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	
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Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Ala	Ser	Trp	
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Ser	Asn	Lys	Ser	Tyr	Glu	Asp	Ile	Trp	Glu	Asn	Met	Thr	Trp	Ile	Gln	
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Trp	Glu	Arg	Glu	Ile	Asn	Asn	Tyr	Thr	Gly	Ile	Ile	Tyr	Ser	Leu	Ile	
625				630					635					640		
Glu	Glu	Ala	Gln	Asn	Gln	Gln	Glu	Thr	Asn	Glu	Lys	Asp	Leu	Leu	Ala	
			645					650					655			
Leu	Asp	Lys	Trp	Thr	Asn	Leu	Trp	Asn	Trp	Phe	Asn	Ile	Ser	Asn	Trp	
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Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	Leu	Ile	Pro	Asn	Pro	Thr	Glu	
705				710					715					720		
Ala	Asp	Arg	Pro	Gly	Gly	Ile	Glu	Glu	Gly	Gly	Gly	Glu	Gln	Gly	Arg	
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Thr	Arg	Ser	Ile	Arg	Leu	Val	Asn	Gly	Phe	Leu	Ala	Leu	Ala	Trp	Asp	
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Asp	Leu	Arg	Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp	Phe	
	755					760						765				
Val	Leu	Ile	Ala	Ala	Arg	Thr	Val	Gly	Thr	Leu	Gly	Leu	Arg	Gly	Trp	
	770				775						780					
Glu	Ile	Leu	Lys	Tyr	Leu	Val	Asn	Leu	Val	Trp	Tyr	Trp	Gly	Gln	Glu	
785				790				795						800		
Leu	Lys	Asn	Ser	Ala	Ile	Ser	Leu	Leu	Asn	Thr	Thr	Ala	Ile	Ala	Val	
		805					810						815			
Ala	Glu	Gly	Thr	Asp	Arg	Ile	Ile	Glu	Ile	Ala	Gln	Arg	Ala	Phe	Arg	
	820					825					830					
Ala	Ile	Leu	His	Ile	Pro	Arg	Arg	Ile	Arg	Gln	Gly	Leu	Glu	Arg	Ala	
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Leu	Leu															
	850															

<210> 26
 <211> 204
 <212> PRT
 <213> human immunodeficiency virus nef protein

<220>

<221> VARIANT

<222> 132

<223> Xaa = Any Amino Acid

<400> 26

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Gln	Asp	Leu	Ala	Lys	His	Gly	Ala	Ile	Thr	Ser	Ser	Asn	Thr	Ala	Ala
		35					40					45			
Thr	Asn	Asp	Asp	Cys	Ala	Trp	Leu	Glu	Ala	Gln	Thr	Glu	Glu	Glu	Val
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Gly	Phe	Pro	Val	Arg	Pro	Gln	Val	Pro	Leu	Arg	Pro	Met	Thr	Tyr	Lys
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Gly	Ala	Phe	Asp	Leu	Ser	Phe	Phe	Leu	Lys	Glu	Lys	Gly	Gly	Leu	Asp
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Gly	Leu	Ile	Tyr	Ser	Lys	Lys	Arg	Gln	Glu	Ile	Leu	Asp	Leu	Trp	Val
			100					105					110		
His	Asn	Thr	Gln	Gly	Tyr	Phe	Pro	Asp	Trp	Gln	Asn	Tyr	Thr	Pro	Gly
		115						120				125			
Pro	Gly	Thr	Xaa	Tyr	Pro	Leu	Thr	Phe	Gly	Trp	Cys	Phe	Lys	Leu	Val
	130					135					140				
Pro	Val	Asp	Pro	Ser	Glu	Val	Glu	Glu	Ala	Asn	Glu	Gly	Glu	Asn	Asn
145					150					155					160
Cys	Leu	Leu	His	Pro	Ala	Cys	Gln	His	Gly	Ile	Glu	Asp	Glu	Glu	Arg
				165					170					175	
Glu	Val	Leu	Lys	Trp	Lys	Phe	Asp	Ser	Ser	Leu	Ala	Arg	Arg	His	Ile
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Ala	Arg	Glu	Leu	His	Pro	Glu	Phe	Tyr	Lys	Asp	Cys				
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<210> 27

<211> 158

<212> PRT

<213> human papilloma virus E6 protein

<400> 27

Met	Ala	Arg	Phe	Glu	Asp	Pro	Thr	Arg	Arg	Pro	Tyr	Lys	Leu	Pro	Asp
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Leu	Cys	Thr	Glu	Leu	Asn	Thr	Ser	Leu	Gln	Asp	Ile	Glu	Ile	Thr	Cys
			20					25					30		
Val	Tyr	Cys	Lys	Thr	Val	Leu	Glu	Leu	Thr	Glu	Val	Phe	Glu	Phe	Ala
		35					40					45			
Phe	Lys	Asp	Leu	Phe	Val	Val	Tyr	Arg	Asp	Ser	Ile	Pro	His	Ala	Ala
	50					55					60				
Cys	His	Lys	Cys	Ile	Asp	Phe	Tyr	Ser	Arg	Ile	Arg	Glu	Leu	Arg	His
65				70					75						80
Tyr	Ser	Asp	Ser	Val	Tyr	Gly	Asp	Thr	Leu	Glu	Lys	Leu	Thr	Asn	Thr
			85					90						95	
Gly	Leu	Tyr	Asn	Leu	Leu	Ile	Arg	Cys	Leu	Arg	Cys	Gln	Lys	Pro	Leu
			100					105					110		
Asn	Pro	Ala	Glu	Lys	Leu	Arg	His	Leu	Asn	Glu	Lys	Arg	Arg	Phe	His
		115					120					125			

Lys Ile Ala Gly His Tyr Arg Gly Gln Cys His Ser Cys Cys Asn Arg
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 Ala Arg Gln Glu Arg Leu Gln Arg Arg Arg Glu Thr Gln Val
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<210> 28
 <211> 105
 <212> PRT
 <213> human papilloma virus E7 protein

<400> 28
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 Pro Gln Asn Glu Ile Pro Val Asp Leu Leu Cys His Glu Gln Leu Ser
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 Asp Ser Glu Glu Glu Asn Asp Glu Ile Asp Gly Val Asn His Gln His
 35 40 45
 Leu Pro Ala Arg Arg Ala Glu Pro Gln Arg His Thr Met Leu Cys Met
 50 55 60
 Cys Cys Lys Cys Glu Ala Arg Ile Glu Leu Val Val Glu Ser Ser Ala
 65 70 75 80
 Asp Asp Leu Arg Ala Phe Gln Gln Leu Phe Leu Lys Thr Leu Ser Phe
 85 90 95
 Val Cys Pro Trp Cys Ala Ser Gln Gln
 100 105

<210> 29
 <211> 843
 <212> DNA
 <213> human papilloma virus

<400> 29
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 atagaaataa cctgtgtata ttgcaagaca gtatttgaac ttacagaggt atttgaattt 180
 gcattcaaag atttatttgt ggtgtataga gacagtatac cgcattgctgc atgccataaa 240
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 gacacattag aaaaactaac taacactggg ttatacaatt tattaataag gtgcctgcgg 360
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 cacaaaatag ctgggcacta tagaggccag tgccattcgt gctgcaaccg agcacgacag 480
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<210> 30
 <211> 11835
 <212> DNA
 <213> Epstein Barr virus

<400> 30
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<213> homo sapiens survivin

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<211> 3107

<212> DNA

<213> homo sapiens melanoma antigen

<400> 35

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<212> DNA

<213> homo sapiens melanoma antigen

<400> 36

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<213> homo sapiens melanoma antigen

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